

PROCESS AND PRODUCT TECHNOLOGY

钛酸钾晶须耐碱多孔陶瓷的制备及表征

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摘要 The preparation and characterization of alkaline resistant porous ceramics from potassium titanate whiskers are studied. K₂Ti₄O₉ whiskers in the whisker preforms (mixtures of K₂Ti₆O₁₃ and K₂Ti₄O₉) were completely converted to K₂Ti₆O₁₃ at 960°C. The alkaline resistance as well as the change in bending strength, porosity and permeability of the ceramics was investigated by altering the composition of the preforms in which the content of K₂Ti₆O₁₃ whiskers was higher than 50% (molar fraction). The alkaline resistance of the porous K₂Ti₆O₁₃ ceramics is found much higher than that of Al₂O₃ in caustic NaOH solutions, and further study indicates that the K₂Ti₆O₁₃ ceramics can be stably used in solutions of pH > 2.0. The bending strength increases initially with the content of the raw K₂Ti₆O₁₃ in the preforms up to 66% (molar fraction) and then decreases, contrary to the behaviors of porosity and permeability. The values of bending strength, porosity and permeability of the ceramics prepared from the preform of 80% (molar fraction) raw K₂Ti₆O₁₃ whiskers are respectively 56MPa, 29.4% and 330L·m⁻²·h⁻¹, which are comparable to those of the porous Al₂O₃ ceramics.

关键词 [ceramics](#) [alkaline resistance](#) [sintering](#) [potassium titanate](#)

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Preparation and characterization of alkaline resistant porous ceramics from potassium titanate whiskers

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Key words [ceramics](#); [alkaline resistance](#); [sintering](#); [potassium titanate](#)

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